Cost and Management

Incorporated in 1920 and published monthly by the
SOCIETY OF INDUSTRIAL AND COST ACCOUNTANTS OF CANADA
Editorial and business offices:
31 Walnut Street South, Hamilton, Ontario
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Subscription price to non-members, $5.00 per year
Single copies, 50 cents. Members desiring five copies or more of a single issue, may obtain them at 25 cents each.

Opinions expressed by articles and comments are not necessarily endorsed by the Society.

Authorized as second class mail, Post Office Department, Ottawa.
Returned postage guaranteed.

Editorial Comment . . .

Changing Emphasis

SOME OF THE MOST important implications of change are upon us before we are aware than any change has taken place. Most significant changes are the result of a conflux of various forces and are slow to emerge as dominating influences in society.

The student of history, in retrospect, can look back on a scene of confusion and distinguish between noise and accomplishment, between the planting of a vital idea and the repetition of an empty platitude. He can see in the occurrence of an unspectacular event the beginning of a great movement.

In the field of accounting, the concepts and methods of practice were slow in emerging. As in many other disciplines, the advances in recent years have been mostly in the application of theory. One of the significant steps in accounting was taken when bookkeeping and score-keeping gave way to cost accounting. The accountant then became a valuable member of the team dedicated to the reduction and control of manufacturing costs. The control and economies realized in the manufacturing area have been a significant accomplishment. However, accountants should realize that their contribution to this achievement has only been made possible because they have supplied operating personnel with the accounting information they need in a form they can use in the control of their daily production routine.

Cost accountants must remember that their value rests only in the use that is made of cost information. If they forget that cost accounting is a valuable tool that should be used for more efficient business operation, then they are in serious danger of reverting to the role of score keepers and of being replaced by a more vigorous discipline.

It would seem that it is time for cost accountants to take a serious look at their methods and techniques and to assess their value to the business world in the light

of the many advances in industrial technology and the newer methods of doing business.

One of the fastest changes taking place in industry is the replacement of manual by machine and automated methods of production. This should have great significance to cost accountants. First, it is changing the adequacy of labor as a fair base by which to allocate costs. Secondly, as more costs become relatively fixed in the form of investment and maintenance, the old emphasis on variable costs becomes less important. This is especially true when control of variable costs has reached such an advanced stage.

The change to more mechanized and automatic production and distribution methods has caused an increase in investment and in maintenance costs. This trend has brought the maintenance engineer to the fore and substituted a planned maintenance program for the old concept of repair when the roof caves in. This is a logical move since it is apparent that, once an investment is made in expensive facilities, it is necessary to keep those facilities producing. Thus one can see the emphasis shift from the question of how efficient is labor to how efficient and productive are the plant facilities.

In the February 1959 and January 1961 issues of *Factory* magazine, there are some excellent observations on plant maintenance and the cost implications. One article points out that the head of plant maintenance cannot do a good, economical job unless he is consulted before certain decisions are made. First, before the purchase of equipment, he may point out the difficulty and costs of repair; second, before machinery is designed, he may suggest simplicity for the sake of maintenance; third, in plant layout, he can suggest an arrangement that would facilitate ease of servicing equipment and thus reduce costly delays. These articles point out that, if proper study of these areas is conducted before firm commitments are made in fixed assets, some maintenance costs need not rise steadily, but, instead, may be prevented from occurring.

The cost studies in *Factory* represent a fine piece of research work and the editors are to be congratulated on their achievement. However, in reading these forward-looking articles, one is left with the impression that the studies were made by industrial engineers. If such is the case, then it should be of some concern to industrial accountants that the area of discipline in which they are trained is being used extensively by another profession. Engineers who have acquired this necessary knowledge are to be commended.

It would seem in order at this time for cost accountants to take a close look at their techniques and the adequacy of their methods in dealing with current problems. Such an analysis may reveal that we are concentrating on refinements and controls of cost questions that have lost their importance. If such is the case and we do not hasten to concentrate our facilities and our services in more critical problem areas, then we may be sure that some more active discipline will acquire the knowledge to fill the need.

This is not to say that the accountant can perform his services without the help of other professions, but he can become more aware of the changing nature of things. In demonstrating that he has the knowledge and competence to take the measure of new situations, he can thus render an invaluable service to management.

BUDGETING — TOOL FOR PROFIT MANAGEMENT

By R. W. Fisher,
Manager — Budget Control,
Beech Aircraft Corporation,
Wichita, Kansas.

The budget is the master plan of action that coordinates all facets of an enterprise towards a single profit goal. This case study describes the installation of a successful budgetary control program in a large aircraft company and formulates principles for its application. Numerous exhibits of budgetary control reports document the article.

ALL MANUFACTURING enterprises comprise at least six major functions—

Research and Development	Marketing
Engineering	Sales
Manufacturing	Finance

which must be fully coordinated to produce *the highest quality product, on schedule, for the lowest possible price at a reasonable profit for its efforts.*

With the coordinated efforts of these primary functions, a company's success can be improved immeasurably.

The coordinating force is MANAGEMENT. The management of a company is responsible to its stockholders or owners for administering the activities in the most efficient manner available to produce maximum profits.

The coordinating tool is BUDGETING. A budget might be described as a master plan of action in directing all forces toward the attainment of a pre-established profit goal.

If management is to plan for increased profits, offset rising prices and retain its competitive position, it must provide a "barometer" to diagnose constantly changing conditions that distort previously satisfactory relationships between costs and profits. Sound budget and cost control programs provide the media of detection.

An effective budget program is designed for the specific purposes of—

1. Establishing profit goals without restricting department managers to unrealistic objectives or curtailing responsibility
2. Improving coordination and cooperation of the management team in attaining a common objective
3. Encouraging the management team to evaluate their methods and plans for the most economical operation
4. Providing a "measuring stick" or safety signal for applying corrective action to variations from original plans.

Mr. Fisher has had 22 years of experience in the fields of accounting, systems and procedures, data processing, office management and budget administration. Since he joined Beech Aircraft in 1937, he has held the position of Paymaster, Accounting Office Manager, Systems Accountant, and Staff Assistant—Data Processing. He has managed the Budget Control Department since September 1954. He has been active in a number of professional associations, including the National Association of Accountants and the National Office Management Association.

5. Developing executive abilities for sound decision-making based upon facts and their relationship to the business as a whole.

A complete budgetary program includes sales budgets, direct and indirect costs and expense budgets, cash requirements budgets, and capital equipment budgets. It also includes the correlation of these into a master plan for purposes of forecasting profits and guiding top management in decisions for more effective planning next month, next year or five years hence.

SCOPE

The scope of budget administration encompasses three prime phases of operation—

Planning Coordination
Review and Control.

The Planning Phase—reviews the influence of costs on the financial stability of the company and includes—

1. Organizational Planning—Establishing responsibility
2. Policies and Procedures—Establishing methods and course of action
3. Standards—Establishing operational goals and budgets
4. Delivery Dates—Establishing firm production schedules.

This phase includes a study of the effects of the additional business on the total operation as a whole, need for additional capital and capital equipment, manufacturing area, inventory investment, sales promotion, direct and indirect costs and expenses, and other factors influencing the decisions of management to enter into a new program.

The Coordination Phase—provides effective communications to—

1. Stimulate two-way communication between top management and department managers
2. Provide assistance and guidance to meet the objective
3. Encourage free expression of opinion.

This phase, in some respects, is the most important. The success of the budget program depends entirely upon the people who use it effectively with a clear understanding of its objectives. There can be no effective budgeting without the full strength of the management team behind it. The tact, diplomacy and enthusiasm of top management and budget executives are all-important in keeping the program under effective control.

The Review and Control Phase—includes—

1. Periodic comparison of pre-established budgets and operational goals with actual results
2. Detailed and up-to-date accounting systems
3. Directing department managers' attention to the unfavorable trends and failure in performance
4. Providing assistance in developing satisfactory solutions for correcting variations from original objectives.

Department managers must be furnished constantly with those analyses of past experience which may be useful in determining future plans. The management team maintains confidence in the program to the degree that the budget executive furnishes information promptly and clearly and assists in analysis of the facts.

Whenever possible, the budget executive should make reports self-analytical. This approach encourages analysis and corrective action by those responsible for the operation. The budget executive should avoid exercising undue authority or pressure when he may not have the full knowledge, experience or responsibility for making a sound decision.

Recognition and full consideration of the department manager's decision guarantees full participation and enthusiasm for the program.

ORGANIZATIONAL STRUCTURE

With the purpose and scope of the budgetary program established, the next step is to establish the organizational structure and define the responsibilities of each position.

Basically, every department manager assigned a budget must be informed that he is directly responsible for the planning and control of his respective area of operations. Not only must he be informed but he must be given the opportunity to express his opinions and formulate his own decisions. He must be furnished with assistance and guidance and kept fully informed of plans which may affect his operations.

Responsibility for administering the budget program may be placed under the president, executive vice president, comptroller, chief accounting officer or other executive officers, depending upon the individual company's structure.

Where the assignment is placed in the organizational structure is of lesser importance.

More important is the authority given to the budget executive to operate effectively in the formulation of policies and procedures, i.e. accumulating, analyzing and reporting, and making recommendations to both operating managers and executives for improvement in costs.

The budget executive should be chosen carefully since he may not, at first, be accepted as a welcome member of the management team and his diplomacy, personality and tact may well be the key to maintaining the enthusiasm and obtaining the necessary cooperation for success of the program.

BEECH SYSTEM

Budgetary control was formally established by Beech Aircraft in June 1953 after many months of planning the objectives and establishing the budget control department directly responsible to the executive vice president—coordinator.

A special meeting was called by the president to announce the establishment of the budget control department, its purpose, scope and responsibilities to both the executive committee and the operating managers. A six-point program was established to assure department managers that the company was going to—

1. Continue in business
2. Improve the financial position
3. Improve the profit position
4. Build better products
5. Build better products at lower costs
6. Build better products at lower costs on or ahead of schedule.

With these basic objectives outlined, the budgetary control program came into existence and is today an integral part of the organizational planning, coordination and control program.

CONTROL BY EXCEPTION

The budgetary control program is designed to operate effectively on the "control by exception" concept. The "control by exception" concept of budget administration provides—

1. Simplicity and flexibility of operation
2. Up-dated comparisons with historical data and pre-established objectives for managerial analysis
3. Systems and procedures which are easily adjusted to meet current requirements
4. Prompt action by management to adjust for variations from original plans.

Knowledge of the historical facts alone does not necessarily produce greater profits. Historical facts are the basis on which decisions can be formulated when they are used to determine their changing effects on the profit structure.

Control by exception measures these changing effects in terms of trends to favorable or unfavorable performance and, when unfavorable, sets the necessary forces into action before any serious results occur.

FORECASTING

The budgetary control program is geared with the master budget prepared by the finance division and composed primarily of a—

1. Statement of estimated income and expense
2. Statement of estimated financial condition
3. Statement of cash requirements.

These three forecasts, up-dated each quarter-yearly for the next succeeding twelve-month period, are supported and developed from—

A. Sales Forecasts
B. Inventory Investment
C. Labor Budgets—Direct and Indirect
D. Manufacturing Expense Budgets
E. Engineering Expense Budgets
F. Sales Expense Budgets
G. General and Administrative Budgets
H. Capital Assets Appropriations
I. Maintenance and Repair Appropriations
J. Research and Development Appropriations.

Upon approval of the master budget, the operating budgets become the control tools to guide the operations on a coordinated and profitable course.

TYPES OF BUDGETS

Three principal types of operating budgets are employed—

1. *Appropriation*—used to establish specific sums of money, manpower and materials for a given project during a specified period of time. These budgets are approved by the executive committee and encompass development of new products, product improvement, capital equipment expenditures, real estate investment, new facilities, advertising and the like.

2. *Semi-Variable*—involves expenditures which do not change as sales or production change. These budgets encompass such costs as cost of occupancy including normal upkeep of land, buildings, building equipment, machinery, plant security and sanitation, rentals and the like.
3. *Variable*—involves expenditures which vary directly with changes in sales and production volume and which permit revision of estimates in operating costs and profits. These budgets are the predominate cost controlling tools in the control of direct and indirect labor costs comprising nearly 40% of total costs.

BUDGET BASE

The largest single factor of cost in most manufacturing concerns is payrolls. Therefore, a common denominator relating to these payroll costs must be chosen as the base against which to measure performance.

Direct labor has proven to be the best selection for this company because—

1. It is better understood than other bases
2. It represents tangible workers
3. It is readily available from accounting information
4. It is directly related to sales, cost-of-sales, production volumes, etc.
5. It had shown the least fluctuation in the cost structure when compared to historical accounting data.

DIRECT MANPOWER COST CONTROL

Contractual maximum direct manpower requirements for military prime and military subcontracts are submitted by the vice president—contract administration to the vice president—coordinator on a per unit and total direct hours basis, in writing, upon receipt of contract.

Commercial airplane direct manpower requirements per unit for the fiscal year are submitted by the vice president—manufacturing to the vice president—coordinator.

Authorized budgets for both military and commercial projects are issued by the manager—budget control to the vice president—manufacturing with the approval of the vice president—coordinator.

Upon receipt of each project budget, learning curve graphs for the total airframe are developed by the manufacturing hours control department responsible to the manager—manufacturing control. These graphs become the internal control media to develop detail schedules and goals for each manufacturing operation and work centre involved.

Responsibility for direct manhours control rests with the manufacturing hours control division.

Control of all direct manhours expended by all facilities includes total direct manhours by individual work orders subdivided into—

1. Departmental manhours—fabrication, sub and final assembly
2. Fabrication, subassembly and final assembly by work centre
3. Lot releases

on a weekly basis.

Compliance to previously established budgets is reported to each individual department foreman within ten days of the time worked.

INDIRECT MANPOWER COST CONTROL

Control of indirect labor costs for supervision, clerical, quality control, receiving, warehousing, trucking, industrial relations, accounting, manufacturing planning, scheduling and production stockrooms, tool cribs, security and sanitation and certain administrative functions, including print shops, mail clerks and office machine maintenance, is measured directly against direct labor additions in terms of percentages.

The only arbitrary indirect labor budgets that have been established were introduced in June 1953. Since that time, every addition of a department manager, and every change made to existing indirect labor budgets has been negotiated by the manager—budget control, prior and subject to approval of the vice president—coordinator.

At the beginning of each fiscal year, a new factory overhead and general and administrative rate budget in terms of percentages of direct labor is determined from past experience and current financial forecasts. Negotiations are entered into to adjust the individual budgets of department managers so that the composite total of all department managers will not exceed the pre-established total percentage budget.

Negotiations give consideration to both past experience and forecasted work-loads and are agreed upon between the manager—budget control and the individual manager before being presented to the vice president—coordinator for final approval.

Each department manager is made responsible for the detailed administration of his own operations by the establishment of available funds based on business forecasts for fiscal year operations.

The budget control program is built on simplicity—it is very flexible and subject to negotiation by either party as conditions change.

DIRECT MANUFACTURING COSTS OTHER THAN LABOR

Upon receipt of military prime contracts and military subcontracts and during annual changes to commercial products, pre-established budgets are also issued by the manager—budget control on—

Direct Materials
Engineering Maintenance
Tooling Maintenance
Direct Project Expense
Packing and Shipping (when applicable)

on a per unit and maximum dollar allowable cost for the period of the contract (military) or for the fiscal year (commercial).

BUDGET COMPLIANCE—DIRECT COSTS

Monthly progress reports of all cost factors are furnished by the accounting department to project administrators responsible for effective administration of each program. It is their responsibility to analyze actual experience as compared with pre-established budgets for the purpose of detecting any unusual variations and to take corrective action.

The manufacturing hours control department, tooling hours control department and engineering hours control department, each under the control and direction of these divisions, analyze all actual hours expended by project on a weekly basis com-

pared with pre-established budgets from labor distribution schedules furnished by accounting.

Since all actual cost experience information is furnished by the accounting department, the comparison of budgeted with actual experience eliminates the possibility of disagreement between operating managers and the budget control department, since their control data and those of the budget control department are obtained from the same source.

BUDGET COMPLIANCE—INDIRECT LABOR COSTS

The budget control department obtains direct labor expenditures from the accounting department and prepares a report of compliance of actual indirect labor expenditures to pre-established budgets by department manager.

The report is furnished weekly to department managers showing compliance to budget—

1. This week
2. Same week last year
3. Cumulative—fiscal year to date
4. Cumulative—past 52 weeks.

Over- or under-budget compliance is shown in terms of dollars, percentage and relative budget standing with other department managers.

The weekly compliance report permits each department manager to determine his trend of operations within ten days of its occurrence, enabling him to apply corrective action to any unfavorable trend in operations.

Competitive spirit has been introduced into the program by showing the department manager his position in the program compared to others each week.

DIRECT MANPOWER BASE FORECASTS

In addition to his weekly compliance report, each department manager is furnished a direct manpower forecast chart prepared by the budget control department from information obtained from manufacturing hours control in order that he may foresee the effect of the workloads on his department six months in the future. These forecasts are distributed at least every three months to reflect changes in direct manpower requirements owing to revised sales forecasts, production schedule changes or other conditions affecting direct manpower levels.

REFINEMENTS TO BUDGET CONTROL

Control of costs, other than wages, which have improved profits and increased efficiency has been gradually added to the program. These include—

1. *Annual Capital Assets Appropriations.*
2. *Annual Maintenance and Repair Appropriations.*
3. *Sales Expense Budgets*—including commissions and bonuses, travel, entertainment, demonstrator upkeep and advertising.
4. *Expenses Other Than Wages*—including shop supplies and perishable tools, processing supplies, telephone and telegraph, office supplies and insurance.

5. *Control of Inventories*—including tool stores, plant engineering stores, raw materials and purchased parts, spare parts and work-in-process.
6. *Overtime Cost Control*—Major improvements have been made in the virtual elimination of overtime through a program of reporting weekly expenditures to each department manager.
7. *Conservation Program*—A highly active conservation committee will create substantial annual savings in both direct and indirect materials and supplies.
8. *Cost Factor Control by Project*—including—

Materials	Packing and Shipping Expense
Direct Labor	Engineering Expense
Factory Overhead	General and Administrative
Outside Production Costs	Sales Expense
Direct Project Expense	

RULES

In summary, there are six basic rules for a successful budget control program:

1. First, determine what purpose your budget program is to serve. Set a goal and a time limit—and continually check for schedule compliance.
2. Plan the installation so that it will gain the rapid cooperation of the department managers who must make it work. Choose your budget executive carefully and give him sufficient authority to perform his responsibilities effectively.
3. Keep the program simple. Present all information honestly, promptly and in terms that all can understand.
4. Make the best use of available accounting and financial information. Obtaining budget information from accounting records will reduce clerical costs. and eliminate conflict of information and duplication of effort.
5. Place the responsibility for administering the budget with the department manager. Placing the decision-making with the department manager relieves top management of the every-day routines of operations, encourages cooperation between operating managers and improves managerial technique.
6. Be constantly on the alert for changing conditions. Flexibility in the budget is of prime importance. Budgets must be established as reasonable goals of accomplishment. An unrealizable goal will seriously hamper the effectiveness of the budget executive to carry out his responsibilities.

Without a simple and systematic program of planning, coordination and control, a company does not have the least idea of its real potential.

A cost improvement program is not intended to be a restrictive device. It is not expected to solve all the problems of a business, but it will strengthen forward thinking, create stability and enhance the sense of direction.

The complexities of modern business require the synchronization of detail operations so that the entire organization will move forward together.

With a clear understanding of purpose, a properly organized and effective budget control program will provide a most effective tool for profit management.

ILLUSTRATIVE EXAMPLES OF BUDGETARY REPORTS

EXHIBIT I

WEEKLY INDIRECT LABOR BUDGET COMPLIANCE

Manager: Week Ending:

Division: Date Prepared:

	This Week	Same Week Last Year	Cumulative Expenditures ... Weeks 1959 to Date	Past 52 Weeks
1. Direct Labor Base	$	$	$	$
2. Indirect Labor Expended—Note I *Less*: Emergency Fund—Note II	$	$	$	$
3. Normal Operating Expenditures	$	$	$	$
4. Allowable Operating Budget .....% of Direct Labor Base				
5. Over (Under) Budget—Dollars	$	$	$	$
6. Over (Under) Budget—Percent	%	%	%	%
7. Budget Standing—Note III	#	#	#	#
Percentage—Direct Labor Base *Less*: Emergency Fund Credit	%	%	%	%
Normal %—Direct Labor Base	%	%	%	%
9. Equivalent Personnel Regular Payroll—Note IV Special Payroll—Actual *Less*: Emergency Fund—Note II				
Normal Operating Personnel				

NOTES

I. Indirect labor dollars include base hourly wages and equivalent week's special payroll salaries exclusive of overtime premium, holiday and vacation pay.

II. Emergency Fund represents salaries and wages approved by the Executive Committee for a specified purpose in addition to the normal operating budget, subject to cancellation by written notice or September 30 of each year, whichever is the earlier.
$..... Approved; $..... Remaining.

III. Relationship of your standing in the regular operating budget program with other managers. Green circle indicates under budget; red circle indicates over budget.

IV. Represents actual hours worked by hourly paid indirect personnel divided by 40 hours.

EXHIBIT 2

Date:

FROM: Budget Control Analyst

TO: Vice President-Manufacturing

SUBJECT: Manufacturing Division Indirect Expenditures and Percent of Direct Labor for the week of .....

	Allowable Direct Labor		Actual Direct Labor				Over (Under)
	Own	Total	Own	Total	Budget	Actual	Budget
(1) Plant I—Shops							
(6) Tool Grinding							
Subtotal—Pechin							
(2) Plant II—Shops Only							
(3) Plant III—Shops Only							
(4) Liberal—Shops Only							
(5) Herington—Shops Only							
Subtotal—Shops							
(7) Experimental							
(9) Mfg. Engr.							
(8) Tooling*							
(9) Tool Cribs							
Subtotal—Owen							
(9) P.E. & Maint.							
(9) Production							
(9) Mfg Hrs Control							
Subtotal—Burns							
(9) Security & San.							
(9) Procurement							
(9) Otuside Prod.							
Subtotal—Bowery							
Total							

DIRECT LABOR BASES

(1) Plant I	$	(6) 01-801 Machine Shop	$
(2) Plant II	$	(7) Experimental—91	$
(3) Plant III	$	(8) Direct Tooling	$
(4) Liberal	$	(9) Total Direct Labor—All Divisions	
(5) Herington	$		

*Owen-Tooling allowable above includes .7% of Total Direct Labor
Above figures include credits given on Termination Time Reports.

EXHIBIT 3

FROM: Budget Control Analyst

TO: J. A. Elliott

SUBJECT: Indirect Labor Budget Compliance—Treasurer's Office

We are tabulating below a detailed schedule of budget compliance for those groups under your supervision for the week ending .....

Department	Indirect Dollars	Allowable Budget	Over(Under) Budget	Equiv. Pers.	Cum. Fiscal..... Over(Under) Budget Weeks
881-Audit	$	$	$		$
881-Taxes					
881-Billing					
Total	$	$	$		$

EXHIBIT 4

FROM: Budget Control Analyst

TO: J. F. Allen

SUBJECT: Department 270—Indirect Labor Dollars—Week Ending

We are reporting below Dept. 270 indirect labor dollar expenditures and their percentage to Plant II, Model 35 and 95 direct labor expenditures for the week ending .....

Indirect Dollars Expended	Plant II Model 35 & 95 Direct Labor	% to Plant II Model 35 & 95 Direct Labor	Equivalent Personnel		
			Regular	Special	Total
$	$	%			

The above indirect labor dollars includes both hourly wages and equivalent week's salaries of salaried employees. Equivalent regular payroll personnel were computed by dividing the actual hours worked by 40.0 hours. No premium hours or dollars are included.

EXHIBIT 5

MONTHLY OVERTIME COST CONTROL REPORT

Manager: ..... Weeks Of:

Division: Date Prepared:

Regular Hours	Overtime Hours Worked	Overtime Hours O.T. Premium	Overtime Hours Paid	Equivalent Personnel

O.T. Hours Paid—Percentage of Regular Hours— %

	Overtime Dollars Paid This Month Avr. Weekly	This Month Monthly	Fiscal 1959 Weeks	Same Period Last Year
O.T. Dollars Worked				
O.T. Premium Paid				
Total Overtime Paid				
% O.T. Hours—Regular Hours			%	%

I. Regular and overtime hours paid are obtained from Weekly Payroll Analysis prepared by Dept. 83, Accounting, and cumulated for the month.

II. Overtime dollars are computed at the average hourly rate of the department(s) responsible to each department manager. Premium overtime dollars are computed at 50% of overtime dollars worked on the assumption that no double time is paid.

PAYNE, PATTON & PUGSLEY

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EXHIBIT 6

MONTHLY OVERTIME COST CONTROL REPORT

..... Weeks of:

Date Prepared:

Manager:

Division:

	Regular Hours	Overtime Hours			Equiv. Pers.
		Worked	O.T. Prem.	Paid	
Regular					
Stand-by/Guards					

O.T. Hours Paid—Percentage of Regular Hours—

Regular	%
Stand-by/Guards	
Total	%

	Overtime Dollars Paid			
	This Month		Fiscal 1959	Same Period
	Avr. Weekly	Monthly	Weeks	Last Year
O.T. Dollars Worked				
Regular				
Stand-by/Guards				
Total				
O.T. Premium Paid				
Regular				
Stand-by/Guards				
Total				
Total O.T. Paid				
% O.T. Hours—Regular Hours				

I. Regular and overtime hours paid are obtained from Weekly Payroll Analysis prepared by Dept. 83, Accounting, and cumulated for the month.

II. Overtime dollars are computed at the average hourly rate of the department(s) responsible to each department manager. Premium overtime dollars are computed at 50% of overtime dollars worked on the assumption that no double time is paid.

III. Wichita Division maintenance stand-by crews comprise twenty-five (25) employees—48 hours per week. Wichita Division Security Guards comprise fifty (50) employees—44 hours per week.

The Editor's Choice

SOME FALLACIES IN FIGURING RETURN ON INVESTMENT
by R. N. Anthony, N.A.A. Bulletin, Dec. 1960.

This well-known author acknowledges the many recent refinements used in calculating return on investment. At the same time, he points up the errors that have crept in as the use of the techniques become more widespread. Mr. Anthony discusses five fallacies that have grown up with the use of the time-adjusted return concept (this concept has many different names). These fallacies are:1) ignoring income tax, 2) present value is too complicated, 3) the higher the return, the better the project, 4) leasing is always advantageous, 5) payback never gives a useful answer.

DATA PROCESSING FOR SMALL CLIENTS
by R. A. Crovatto, Journal of Accountancy, Dec. 1960.

In this article, the author brings the use of electronic data processing within the range of the small operator. Since the installation of expensive punched card equipment is not feasible for the smaller business, the alternative is to explore the use of less expensive machinery producing punched paper that may be processed in a service bureau operated by the manufacturers of electronic equipment. The author outlines the steps necessary to convert from manual to automated methods and discusses the main points of consideration and the implications of making such a move.

ADMINISTRATIVE PROBLEMS OF GROWTH
Canadian Manufacturers' Association.

This is a series of eight articles written by faculty members of the School of Business of the University of Toronto. The titles of the articles are "Recognizing the Need for Change", "Developing the Company Sales Forecast", "The Marketing Concept and Changing Channels of Distribution", "Production Control in the Growing Company", "Financing the Growing Firm", "Manager and Employees in the Growing Firm", "Labor Relations in the Growing Firm", and "The Forecast Budget as a Means of Control". These articles are short and each one discusses in rather general terms the implications of growth in these various areas of adminstration.

FINANCIAL LEASES BELONG ON THE BALANCE SHEET
by J. Rhodes, N.A.A. Bulletin, Dec. 1960.

The author discusses this form of financing which has grown so fast in recent years. He concludes that what may be legally adequate for statement presentation is not necessarily sound from an accounting and financial viewpoint. Three main conclusions reached are: 1) The footnote, most favored practice, is not adequate for the disclosure of lease arrangements, 2) Leasing is a form of debt financing and should be reflected as such in the balance sheet, 3) Leasing offers several advantages other than its effect upon the balance sheet.

COMMON DENOMINATORS FOR PROFIT MEASUREMENT

By Lee L. Keener, Treasurer,
B. F. Goodrich Canada Limited,
Kitchener, Ontario.

The growth of industry and the trend to automation have created as never before a demand for the accountant's skills. Management in all areas needs the tools and techniques he can provide to solve the problems of growth. This article deals with three of these—inter-divisional pricing, allocation of administrative and service departments, and measurement of overall performance—and explores the accountant's contribution to profit in each area.

GROWTH ALONE has brought problems in profit management never before faced. Acquisitions, new capital expenditures, new methods in both manufacturing and distribution demand the application of tools and techniques that had not until the last few years been developed fully or tested.

This paper is confined to a small segment of these tools and the problems that face today's accountants. It is directed to a brief discussion only of several of the aids and hindrances that have been explored to enable management to make its line and staff organizations profit-conscious. They will be discussed under the headings of:

1. Inter-divisional pricing
2. Allocation of administrative and service departments
3. Measurement of overall performance.

POLICY USED FOR INTER-DIVISIONAL PRICING

For this discussion I intend to consider inter-divisional pricing in a very broad aspect. We shall talk about the pricing of products produced in one unit of an enterprise for another unit of the same enterprise. This enterprise may be a single proprietorship or a corporation, but it is an entity for financial statements for its owners, and for tax purposes.

What is the purpose of an inter-divisional or intra-enterprise pricing system? It is required whenever a company having internal financial transactions decentralizes profit responsibility.

There are two classes of items that are subject to inter-divisional pricing. The first class includes those parts more or less readily available, the source of which is dictated largely by economics; these create the make-or-buy considerations based on cost. In some instances the decisions must be long range, for the investment is large. On the other side of the coin, make-or-buy decisions can be readily changed if the investment is low.

Constant change is taking place in costs of borrowing, available capital and produc-

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Mr. Keener joined B. F. Goodrich in Akron, Ohio, in 1940, serving in various accounting and auditing capacities. In 1954, he was appointed to his present position of Treasurer of the Canadian company. Born in Alliance, Ohio, he attended Mount Union College in Ohio and later the University of Arizona where he received his B.A. degree in Business Administration. He is a Past President of the Cleveland Institute of Internal Auditors and a member of the Canadian Manufacturers Association.

tion processes. The managerial accountant should initiate studies in these areas when he knows that changes have taken place. Past decisions should be appraised frequently in the light of experience since the decisions were made.

The second class of items subject to inter-divisional pricing covers those parts that probably will never be produced by an outside supplier, for reasons of secrecy, quality control, or simply the lack of any outside source.

How should the first classification be priced? It is evident that competitive pricing is most favored, and best serves the profit motive. Certainly the use of trade list prices is the most defensible basis of inter-company pricing. The inter-company buyer pays prices as low as those charged to the most favored customers. The selling division obtains the same income as if it sold the same products to outside customers. Under this method, disagreements on inter-company prices are eliminated or reduced to a very few which can be readily resolved.

But what should we do if there are no list prices for inter- or intra-company trading? The prices must then be set in negotiation between the managers of the buying and selling units or by the application of an established formula. Negotiated prices can well result in differences of opinion which must be settled by the chief executive or his administrative staff. Formula approaches demand that the formulas be stated as company policy, or there will be constant pressure for their modification.

Some of these formulas may become very complex, as they may involve costs and capital of each unit, and some time period must be selected for determination of these items. They may be based on several prior years, the budget for the current year, or on some combination of the two. Commonly the formulas may be budgeted cost plus profit, or base period cost plus profit, or sometimes factory cost.

The most important requirement of inter-divisional pricing is that both the interests of the division and the company be protected. Pricing systems can be invaluable to these interests, or work against them.

A situation in which accounting management has a heavy responsibility is that in which the division buying on the outside finds it more profitable than buying within the company, but the difference may not be enough to offset the income loss through lower volume of the division which lost the business. Allowing such a loss to occur is inexcusable, and both top management and managerial accountants have a part to play in seeing that divisional heads give first consideration to company profits and second consideration to divisional income. Divisional profit-consciousness can work further to the disadvantage of the company as a whole if the pricing system is not carefully worked out and thoughtfully administered. An article in a recent periodical outlined several ways in which this disadvantage may occur.

A supplying division within a large company was permitted to retain the cost savings of any design change until the end of the model year, without passing these savings on to the buying division. This procedure simply discouraged *interim* design changes, which were held off until the next model year, when credit would accrue for a full twelve-month period. The situation was readily correctable. The rule was changed to allow the manufacturing division to keep the savings for exactly twelve months.

In another case, a certain part was being purchased from both an outside source and a company division. The company rule was to permit the internal price to be

set at the outside price. In this case, although the outside price seemed high in relation to its estimated cost, the manufacturing division refused to reveal any cost information to the buying division to help them negotiate a more favorable price, for the manufacturing division then would have to reduce its selling price.

This conflict of interests was resolved by delaying for one year the reduction of the internal price, if the selling division would assist the buying division in providing the necessary cost information.

One other example illustrates the losses one company took by a failure of the buying division to shop for better prices outside the company. When it finally was found out that the item could be bought externally for 15% less, pressure was put on the manufacturing division to reduce the cost of the part by making some design changes, effecting a reduction in direct labor costs, and lowering material waste.

We cannot assume that prices are satisfactory simply because profits are satisfactory. Without pressures of some kind, as in this case, manufacturing costs tend to stabilize. Manufacturing divisions, including those whose product may be entirely captive, should be subjected to the same competitive pressures on costs that are experienced by independent companies.

My company follows the basic competitive concept of pricing inter-divisionally at prices approximate or equal to the price available to independent customers purchasing products of like quality, quantity and value in the ordinary course of business, if this can be determined. If not, the pricing is budgeted cost plus profit. It is necessary, of course, to review and establish with Canadian Customs the fair market value of inter-divisional items crossing the border, and basis of value is established, not by the company, but by Customs regulations, which is an area of pricing outside the frame of reference for this talk.

The accountant's dual role in inter-divisional pricing is a difficult one. Having once injected inter-divisional profit into his accounting scheme, he in turn must take it out at the company level. Eliminations will always be necessary when internal transactions carry an element of imposed profit. These profits, of course, are held in suspense, being transferred to income at the company level when shipping and inventory records indicate that the products involved have been sold to trade. The elimination problem even may exist when trading is at cost, where companies use standard cost. Standards built at different times may cause a profit or loss to arise which should be held in an inventory valuation account until the goods are sold outside the company.

ALLOCATION OF HEAD OFFICE DEPARTMENTS

Another area of accounting which creates its own peculiar problems for the accountant is the allocation of head office services. We have suggested that it is important to make divisional personnel profit-conscious. Service departments, and there are many of these in a large company, are peculiarly subjected to strong opinions regarding their allocations because of their effect on divisional income. I have had many discussions on this problem with people from other companies, and the conflicts appear to be almost classic in their tenacity.

Several years ago, I presented our allocation bases to a large segment of our operations group. Our procedure was thoroughly explained, alternate methods ex-

plored, and majority opinions adopted as company policy. Should you be faced with this same problem, I can recommend that you arrange a joint meeting of your division or department heads to arrive at a common or, at least, majority approval. You may then find some troubled waters stilled.

It is rare to find allocation bases determined oftener than once a year. The time is well spent in considering these thoroughly to attain as great a degree of accuracy as possible.

In our company, each service department studies the job functions and people to determine the allocation of their costs to other departments and/or product divisions.

Below is a breakdown of some representative head office departments and the factors used in determining distribution of department costs to product divisions.

Department	*Method Used in Distributing Expense*
1. Administrative	Previous Year's Cost of Sales
2. Personnel	Charged to Administrative and Factory Departments on a Declared Basis.
3. Accounts Payable	Invoice Volume
4. Sales Services	(1) Time Spent (2) Invoice Volume
5. Sales Accounting	Time Spent
6. Tabulating	(1) Cost of Reports (Tapes) (2) General Agreement
7. Credit	Time Spent
8. Purchasing	Charged to Administrative and Factory Departments on a Declared Basis.

Head office department cost allocations do not differ in principle from the methods in use for distribution of factory service departments; indeed they are a step-child of principles adopted earlier in factory cost accounting.

Inequities cannot distort profits materially between commodity segments or divisions. Nevertheless, it can distort them. Some head office allocations are easy; the functions covered suggest reasonable bases. Others, as you know, must be somewhat arbitrary. A case in point is General Administrative, which generally includes corporate officers and their immediate staffs.

Our base is the cost of sales relationship in the immediate preceding year. The thinking here is that this department is organized to service the product divisions as they enter the new accounting year, and that windfalls or misfortunes within a sales division should not penalize or benefit the various product lines on a short-range basis. This approach would not be valid in a company whose product lines take wide swings between years. There are many variants of this method, of course, in other companies. Another method, entirely different, is the allocation of executive costs on the basis of the value of the assets assigned to each commodity. The theory here is that the greater the amount of assets used by a product, the greater will be the demands on management toward earning a maximum profit from these particular assets.

There is no method, for any department, which is not a compromise between value, cost and practicality. The selection of any method can readily be explained, but

never can be justified as representing adequate cost accounting procedure.

Do not overlook the savings opportunities, if your management will agree, of allocating declared amounts monthly from those departments whose costs are more or less constant. Residual amounts can readily be taken to an undistributed account for semi-annual or annual distribution.

This subject should not be closed without reference to the possibility that accounting time and money is wasted in needless prorating. I am not a proponent of this concept, but I will submit that in some systems greater control actually is provided by not prorating. Like an uncompleted forward pass, no one will take much responsibility for expenditures when they are prorated. Certainly voluminous accounting time is spent both in the prorating procedure and the defence thereof.

BROADER ASPECTS OF MEASURING OVERALL PERFORMANCES

The basis for measuring profits is a matter of major importance. The relationship of *profits* to the *investment* required is the final profitability gauge for an enterprise and I believe there can be no significant differences of opinion with this concept. There is, of course, much diverse opinion as to the procedures to be used in calculating the investment figures. Various methods will produce very different results, but the principle of return on capital employed as the proper measure of profitability over the long pull is now widely accepted and investors and creditors rely heavily on this measurement.

Why then do we find that the ratio of profits to *sales* is the most commonly used base in business today? I think it is because the people preparing financial statements, and most of the people reading them, have not been concerned with supplying the money for the business, and therefore have not been inclined to include it as a consideration in the measurement of profits. However, we now see return on capital employed more and more as an added footnote to income statements. It is worth considering that, in industry today, the new interest in return on investment (capital employed) rather than to sales is drawing greater attention to inventories, receivables and capital expenditures, and their inter-locking relationships.

Before going much further in this discussion, we should define return on capital employed, and the formulas for computing it. Let us accept the definition that return on capital employed is the ratio of profits *after* tax to total tangible assets. Capital employed then is the sum of a company's tangible assets as shown on its balance sheet.

A controversial question which will probably not be settled in our generation is whether total assets should be accepted at their gross value, or after valuation reserves.

I cannot tell you which is the more common. Literature on the subject, and it is reasonably voluminous, makes a case for both sides. Each writer implies that his is the more widely accepted method.

Many companies, including my own, use fixed assets at gross value, that is, original book value. This provides an adjustment factor, rough though it be, between operating divisions and competition. Presumably, by using plant values at gross, the distortion is removed between relatively low cost older plants operating less efficiently than higher cost new plants.

The opponents of this viewpoint argue that it is simply a compromise. Furthermore, it is declared that the use of gross fixed assets results in a doubling of some

part of capital employed, since the depreciation which has been recovered in costs may now be in some other asset account, such as cash or inventories or accounts receivable, or perhaps by now may be reinvested in other fixed assets. A great deal has been said on this subject and I would like to make a case therefore only for consistency.

If your present method for measuring profits is serving you well, stay with it. If a base has not yet been established, do some wide reading in this field, for the decision cannot easily be changed once a method has been installed.

Assets used for calculating return on capital employed should be averaged over the period. Some items, such as cash, may not be readily distributed to various divisions except by formula—for example by cost of sales. For divisional applications, the particular circumstances surrounding the organization and accounting would have a material bearing on allocations of common facilities or grouped assets.

Return on capital employed is the ratio of profit after tax to total assets, but is usually shown in formula form which exhibits its separate factors—percent profit on sales, and turnover. The formula is

$$\frac{\text{PROFIT}}{\text{SALES}} = \text{Percent profit on sales}$$

$$\frac{\text{ANNUAL SALES}}{\text{TOTAL ASSETS}} = \text{Turnover}$$

Percent profit on sales times turnover = return on capital employed as illustrated in Chart I.

FACTORS AFFECTING RETURN ON ASSET PERFORMANCE

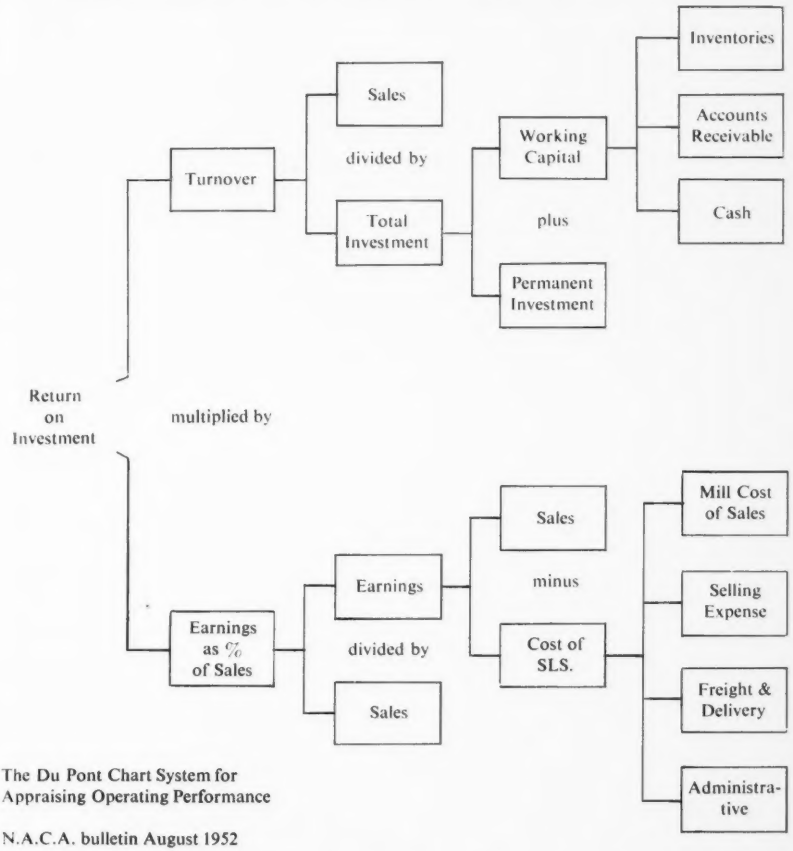
Return will increase by:

1. Increasing sales income without an equal increase in cost. This can be accomplished:
   (1) By improving price, quality and performance, or service of existing product, or increasing breadth of line.
   (2) By increasing market effectiveness through advertising, improved distribution and improved inventory locations.
2. Reducing costs without an equal reduction in sales income, through:
   (1) Parts standardization, or simplified design.
   (2) Reduction in material costs, improved control of wage and expenses.
   (3) Better layout, equipment or processes.
   (4) Reduced distribution costs.
3. Reducing capital employed through:
   (1) Combinations and reductions of low profit lines.
   (2) Inventory control, both plant and field.
   (3) Reduced space requirements.
   (4) Better equipment utilization.

It probably would be wiser to avoid a discussion about acceptable returns on capital employed. Funds for expansion surely may be expected to yield a different rate than funds for cost reduction only. A merchandising unit, with little or no fixed assets, might have a far higher return than a manufacturing unit of the same enterprise. Each company within an industry may be expected to have its own situation, just as industries vary widely in their results.

CHART I

RELATIONSHIP OF FACTORS AFFECTING RETURN ON INVESTMENT



The Du Pont Chart System for Appraising Operating Performance

N.A.C.A. bulletin August 1952

It is accepted practice to establish a goal for return on sales, yet data to aid in this goal are not readily available for Canadian companies, which are not obligated to report sales figures. The return on capital employed, however, can be calculated at least twice a year for every company that has an income statement and a balance sheet.

A measuring stick then for this very useful management tool is readily available and acceptable goals or standards may be established, which will serve to sharpen the profit-consciousness of the line and staff people who possess the basic implements to bring the company to real growth. In establishing such standards, the following points among others should be considered:

1. Desire to improve the past performance of the enterprise.

2. Performance of best competitors.
3. Performance of relative industry group.
4. Amount of new capital to be made available, and expected earning power of this new capital.

Industry groups and their business organizations could perform a significant service to their members and business as a whole by undertaking precise surveys of return on capital employed.

Return on capital employed is clearly the end to which private business operates and as a tool may prove to be of far greater power than is recognized today. Progressive studies within your company of this concept, and its by-products, should be given top consideration by each of you as managers.

Throughout this paper, my theme has been to bring out methods that will make divisional personnel profit-conscious, and to decentralize the profit improvement responsibility to top management. We develop sales, manufacturing, research and development programs in support of this central theme of profit improvement, better expressed as improved return on capital employed. Performance goals can be established and adequacy of performance can be quantitatively measured. Actions necessary to improve performance can be brought into better focus and concentrations of planning and funds can be pinpointed to accomplish this improvement.

Now, while the importance of adequate return on capital employed is a concern of all of us, we should not be blind to the fact that there are important non-economic factors that have influenced investment decisions. A recent bank commercial letter(1) devoted considerable space to this aspect of investment and it should be mentioned here. Political or defence establishments may require investments even when a proper return on investment is impossible, if it is to the good of the whole country or a certain part of it. Similarly a business may be continued simply because it is the sole provider of employment in a given town or city, even though little or no profit is generated. A son may wish to carry on a family business, even though it is declining. The prestige of a certain line of activity in some areas may be of more importance than adequate return.

While these aspects may not be of direct importance to us as businessmen, they do suggest factors at work in various industries that tend to keep returns lower than in other lines of endeavour.

CONCLUSION

The role of the accountant has progressed in the last generation until he now has an assured and mature place in the business world. Further challenge to accounting will take place in the next generation. The wonderful and even fantastic tools which have been devised for the accountant to do his work more efficiently still require the guiding hand and thought of the thoroughly experienced accounting man. The challenge of the '60s for the accountant lies in the automated processes which are now providing management with information which would have taken a small army of clerical people to provide just a few years ago.

Accountants certainly do not fear automation or the electronic age that has emerged. But there is a definite challenge to the accounting profession to make the best possible use of the machines and methods that will be available in this era.

(1) The Canadian Bank of Commerce—Commercial Letter No. 6, June 15, 1960.

The Economic SCENE . .

by John A. Sawyer,
School of Business,
University of Toronto.

CANADA'S GROWING LABOR FORCE AND UNEMPLOYMENT

ALTHOUGH the 1950's was a most impressive period of growth in Canada, unemployment has become an increasingly serious problem. A recent forecast estimates that Canada's labor force will grow during the 1960's at an even greater rate than during the last decade. Can the economy grow fast enough to absorb these new workers and reduce the rate of unemployment?

This is the basic question posed in two studies presented recently to a Senate Committee on Manpower and Employment by Professor Wm. C. Hood of the University of Toronto and Mr. F. T. Denton. They emphasize that the basic cause of the growing unemployment has been a decline in the rate of growth of the demand for the output of Canadian industries and not import competition or the borrowing of foreign funds as claimed by some.

Since 1950, the civilian labor force has grown steadily from 5.2 million persons to 6.4 million in 1960. The number of persons with jobs also increased, but with interruptions in the recessions of 1954 and 1958, from 5.0 million in 1950 to 6.0 million in 1960. Thus, the number of persons without jobs and seeking work increased from 3% of the labor force to over 6%. As the accompanying table shows, there were three periods of expansion and contraction during the last decade. At each successive peak in the business cycle, the unemployment rate was higher than at the preceding peak; thus, there was a pronounced upward trend in unemployment while the length of each period of expansion became shorter. There were also

Unemployment at Turning Points in Canadian Economic Activity, 1953-1960 (seasonally adjusted)

Year	*Quarter*	*Peak or Trough*	*Unemployment Rate**
1949	Third	Trough	(not available)
1953	Second	Peak	2.4%
1954	Second	Trough	4.4%
1957	Second	Peak	3.9%
1958	Second	Trough	6.7%
1960	Second	Peak	6.5%

*Persons without jobs and seeking work as a per cent of the total civilian labor force.

Source: *Proceedings of the Special Committee of the Senate on Manpower and Employment*, No. 2, Dec. 8, 1960 (Ottawa: Queen's Printer), pp. 93-96, and Dominion Bureau of Statistics, *Canadian Statistical Review.*

large seasonal swings in unemployment, but these do not explain the increasing level of unemployment.

The growth of the labor force in this period was mainly the result of large-scale immigration and increased participation by women in the labor force. In the 1960's, however, the post-war population increase will begin to have a large effect, and Mr. Denton estimates that by 1965 the labor force will increase by about three-quarters of a million persons. Moreover, there will be further displacement of workers from agriculture. If jobs are to be found for all these workers and if the unemployment rate is to be reduced to about 3% of the labor force, about one million new non-farm jobs must be created in the next five years. This would be a greater rate of increase in employment than Canada experienced in the 1950's.

Employment did increase substantially during the last decade, particularly in the service industries, to absorb most of the past increase in the labor force. The growth in the economy, however, brought about changes in the composition of output and imports which changed the relative importance of the various industries and the industrial composition of the working force. All these changes required adjustments in the industrial allocation of labor and capital. When the economy is growing rapidly, these adjustments can usually be made without undue difficulty and there are few areas of chronic unemployment. Professor Hood points out, however, that in the latter part of the 1950's, the rate of growth of the demand for output declined while the labor force continued to grow at a persistent rate. This decline in the rate of growth of demand for output left the Canadian economy with large amounts of excess capacity in various industries and led to a weakness in capital spending which, according to Hood, "is the proximate cause of the decline in the rate of growth in our national output and employment" (*Proceedings,* p. 155). While import competition intensified the problems for some industries, the decline in the rate of growth cannot be attributed to import competition since imports as a proportion of gross national expenditure have been relatively stable since 1951.

Moreover, Hood points out that the Canadian and United States experience have been the same so that it cannot be argued that the present slackness in the demand for labor in Canada is due to peculiarly Canadian conditions. He argues that, if his analysis is correct, "it follows that the primary emphasis in economic policy should be upon measures that will most readily and effectively stimulate the demand of residents and non-residents alike for Canadian output" (*Proceedings,* p. 157). Such policies would include measures to increase the supply of money, to decrease personal income taxes, to lower interest and foreign exchange rates, and to extend expenditures on social capital.

In his budget speech of Dec. 20, 1960, the Minister of Finance did not introduce policies designed to increase the overall demand for the products of Canadian industries. Instead, he only presented measures intended to alleviate the seasonal problem and to assist specific areas of chronic unemployment. Has he rejected Professor Hood's analysis, which was presented to the Senate Committee on Dec. 8th, or was he unaware of it? A monetary-fiscal policy designed to increase the rate of growth of the economy while maintaining reasonable price stability is necessary if we are to reduce unemployment and absorb the growing labor force of the 1960's.

A PROCESS COST SYSTEM FOR A MEDIUM-SIZED FIRM*

PART I

By R. W. Hiller,
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This thesis outlines a cost system for a potato chip manufacturer which, with minor changes, could be adapted to many small or medium-sized process industries. In the following article, the first of two parts, the author reviews the general and cost accounting procedures and describes the system of material control.

THE FAMILIAR case method will be used in setting forth the salient accounting and cost analysis procedures for potato chip manufacture and distribution. The subject concern will be known as Chips Inc., and will be of a medium size manufacturing chips exclusively. The chips will be marketed in nine different packs ranging in size from a five cent bag to a one pound box and in two flavors, regular and Bar-B-Que.

Chips Inc. is managed by three principal executives who report directly to the general manager who, in turn, reports directly to the board of directors. The controller also serves as office manager and is responsible for all office work, accounting and record-keeping for the organization. The works manager is concerned with the efficient operation of the plant, personnel, production and quality control. Both sales and advertising come under the direction of the sales manager.

As in most food processing concerns, strict adherence to uniform high quality must be maintained.

Potatoes are the most variable factor in chip quality and production. A quality control laboratory constantly tests the raw potatoes for specific gravity, sugar, color and temperature. The finished chips are tested for shortening absorption, salt content, thickness, moisture content and color.

The shortening itself must also be closely watched and tested since, through prolonged storage and heat, the shortening breaks down and the free fatty acid level tends to rise.

Packaging materials also must conform to specific standards to be accepted for production. For example, the keeping quality of the product is largely influenced by the rate at which the packaging medium transmits moisture vapor. Standards are issued to the suppliers which must be met before the packaging materials will be accepted.

Returned goods are closely examined by the laboratory and reasons for the returns carefully ascertained and followed up in order to improve quality methods and procedures.

*Condensation of a thesis submitted for R.I.A. qualification.

Robert W. Hiller has been with Hostess Food Products since 1957 and is presently Chief Accountant. He was previously with Dominion Rubber Company Limited in Kitchener. He began his R.I.A. studies in 1955 and graduated last year. A lifelong resident of the Kitchener-Galt area, Mr. Hiller is an active member of the Grand River Chapter of S.I.C.A. and serves on the Attendance Committee.

Periodic government inspections covering items such as accuracy of net weights and sanitary conditions also contribute to the quality program.

The product is distributed to the retailer in four different ways. Sales are made to grocery wholesalers who, in turn, sell to the retailer. Secondly, the company operates its own trucks in metropolitan centres for sales direct to grocery chain stores. Thirdly, independent distributors, handling snack food lines exclusively, sell directly to retail accounts. Lastly, commission agents handle sales to grocery wholesalers and snack distributors in distant territories at a commission of seven per cent on cost.

The company also maintains a force of some ten detail salesmen on a salary basis who work in conjunction with the wholesalers and distributors in developing territories, promoting goodwill, handling complaints and acting as a liaison between the company and the customer.

GENERAL ACCOUNTING

The company maintains a general ledger only with subsidiary ledgers and records for raw materials, stores materials, supplies, finished stock, capital assets and manufacturing expenses.

Books of original entry include a general journal, voucher register, payroll register and a cash receipts book. A cheque register, as such, is not in use. The cheques are numbered and an adding machine tape of one of the copies serves as the basis for an entry in the general journal, debiting accounts payable and crediting the bank. The cheque copies are stored in an "arch" file and removed as the cheques are presented for payment. The cheques remaining in the file represent the "outstanding" cheques for purposes of bank reconciliations.

Both the voucher register and the accounts receivable ledger are posted on an accounting machine. The payroll is of a "one-write" type which has been found completely satisfactory. The remaining records are all hand-written.

Chips Inc. does not maintain any work in process accounts. Stores materials or raw materials which may be on the production floor are added back into inventories at the period cut-off time. Unpackaged chips are treated as finished goods as chips are sold occasionally in "bulk".

The controller is directly responsible for the complete accounting function. Both the general and the cost accounting departments report directly to the controller and look to him for direction and co-ordination of activities. The controller's responsibility extends to the level of certain policy decisions such as the setting of depreciation rates.

THE COST SYSTEM

Chips Inc. utilizes an actual process cost system coupled with estimated standards for statistical comparison, variance analysis and cost control. The use of estimated standards, besides being inexpensive to maintain, provides adequate cost control and performance data over the various pack sizes. For purposes of packaging cost analysis, the various pack sizes are treated as are various product lines in multi-product firms. This enables the cost department to supply management quickly with actual prime cost figures on a pack size basis. (See Exhibit I)

The company uses estimated standards and flexible budgets to control all costs and expenses. While cost accounting theory advocates the incorporation of standards

EXHIBIT I

CHIPS INC.

Date 10/59 — **PRODUCT SIZE COST SHEET** — Size 10 oz. 16's

POTATO CHIPS — No.

PROCESSING DEPARTMENT	QUANT.	PRICE	STD.	RATIO	ACTUAL
MATERIALS	*n/a*	*n/a*	*19.135*	*1.006*	*19.250*
LABOR	*.4325*	*1.40*	*.606*		
	.0865	*1.50*	*.130*	*.951*	*.700*
OVERHEAD	*.5190*	*3.00*	*1.557*	*.965*	*1.503*
TOTAL PROCESSING			*21.428*		*21.453*

PACKAGING DEPT.

MATERIALS	SCRAP%	QUANT.	PRICE	STD.	RATIO	ACTUAL
BAGS						
BOXES	*1%*	*161.6*	*25.00M*	*4.040*		
LINERS	*2%*	*163.2*	*9.00M*	*1.469*		
OVERWRAPS	*4%*	*166.4*	*35.00M*	*5.824*		
STAPLES	*n/a*	*21.0'*	*1.40M*	*.029*		
TAPE	*n/a*	*55.0'*	*2.00M*	*.110*		
CARTONS	*1%*	*26.9*	*120.00M*	*3.228*		
TOTAL PACKAGING MATERIALS				*14.700*	*1.025*	*15.068*

LABOR	HOURS	RATE	STD.	RATIO	ACTUAL
PACKAGING MACHINE LABOR	*1.3332*	*1.110*	*1.467*		
SUPPLIES SERVICE	*.1111*	*1.10*	*.122*		
BULK FEED	*.1389*	*1.50*	*.208*		
CARTON SEALING	*.2222*	*1.15*	*.256*		
MACHINE SERVICE	*.1111*	*1.60*	*.178*		
TOTAL PACKAGING LABOR	*1.9165*	*1.112*	*2.231*	*.973*	*2.171*
OVERHEAD	*1.9165*	*.70*	*1.342*	*1.027*	*1.378*
TOTAL PACKAGING COST			*18.273*		*18.617*
TOTAL FACTORY COST			*39.701*		*40.070*
SELLING PRICE CARTON *$2.25* LB. *.60000*			*60.000*		*60.000*
GROSS MARGIN—DOLLARS			*20.299*		*19.930*
GROSS MARGIN—PER CENT			*33.83*		*33.22*

into the formal books of account, Chips Inc. feels that similar benefits can be obtained with less clerical labor and but little sacrifice of accuracy with the use of standards separate from the accounting records.

The estimated standards are used primarily for purposes of control and as a basis for cost analysis. The standards are, in all cases, compared with the actual costs and expenses that appear in the general ledger accounts. Gross variances, thus obtained, are further resolved into their components of material quantity and price variances, labor rate and efficiency variances, and overhead controllable and capacity variances.

Because the standard allowances are computed independently of the books of account, they serve as a check on the accuracy of the costs and expenses as reported by the general ledger. Any abnormal variances are traced immediately and their causes ascertained and corrected, if necessary, before the closing of the formal books of account.

Flexible budgets are used extensively as a control feature, particularly in the fields of manufacturing, selling and administrative expenses. At the beginnig of the period, the expenses are reduced to their fixed and variable elements so that budget data based on volume attained can be computed quickly and compared with actual expenses. This provides both an equitable and a realistic basis for comparison and, consequently, for control.

MATERIAL AND ITS CONTROL

Materials represent the most important item in the cost of production. On an average, this cost element approximates 85% of the cost of sales and 60% of the selling price of the product. The success or failure of the business is largely dependent on the price and quality of the raw and packaging materials. Potatoes, particularly, are subject to wide fluctuations in price and quality depending on the success of the crops and the time of year. Elaborate control and cost analysis procedures have been installed to protect this vital asset and to show up quickly any abnormalities which might occur.

The raw materials consist of potatoes, shortening, fuel oil and seasonings, of various types and grades. Fuel oil is not usually considered a raw material but in the company, where is it used for frying, it represents a fairly large cost (.667 per 100 lbs. chips). Packaging materials consist principally of bags, boxes, liners, overwraps, tabs and shipping cartons.

PURCHASING ROUTINE AND CONTROLS

The purchasing department consists of a purchasing agent, a potato specialist and two clerks. The potato specialist works with the growers in an advisory capacity and acts as liaison between the purchasing agent and the growers. He reports to the purchasing agent on the status of the various growers' potatoes and on the advisability of entering into contracts with any of the growers.

Minimum and maximum balances of the various stores items are subject to constant review by the purchasing agent. As sales vary widely throughout the year and "freshness" of stock is a factor, the purchasing agent must work closely with the sales manager and adjust the maximum balances to conform with the changing demand. The fact that orders are filled daily and that only a small finished stock is carried further emphasizes the importance of maximum - minimum stock balances.

A relationship exists between the specific gravity of potatoes, the chip yield, and

the usage of shortening. The higher the specific gravity, the higher the chip yield and the lower the usage of shortening. A formula and graph have been prepared by applying the "method of least squares" to numerous actual observations.

Tables have been constructed showing chip cost for any potato price and gravity. These enable the purchasing agent and the potato specialist to ascertain immediately which of the potatoes available are most advantageous from the cost standpoint. For example, if they were offered potatoes of a specific gravity of 1.070 for $2.00 cwt. and potatoes of 1.090 specific gravity for $2.50 cwt., they would consult the tables prepared from the equation and would find the potatoes of 1.070 gravity would result in a chip cost of $17.80 cwt. and the potatoes of 1.090 gravity in a chip cost of $17.01 cwt. The potatoes of 1.090 gravity at the higher price of $2.50 cwt. are thus more attractive by $0.79 per 100 pounds of chips.

For invoice approval, a stamp is placed on each invoice with sections for voucher number, cheque number, price approval, extensions and final O.K. in place of the formal voucher jacket. The department head to which materials apply, the purchasing agent and the controller must all signify approval on the invoice before payment is made.

RECEIVING AND ISSUING MATERIALS

A stores keeper is in charge of receiving and issuing all materials and supplies except potatoes. All materials and supplies, except potatoes, are kept in a central stores room. Because of the nature of the materials, stock rotation can and is carried out on a strict FIFO basis.

The production superintendent advises the stores keeper of next day's expected production by sizes. This information is summarized from the orders received daily and the finished stock position. The stores keeper converts this information to a materials requirement basis and prepares a master "Daily Materials Requisition" in duplicate. The next morning the materials are issued to the production departments and the original requisition is turned in to the purchasing department to be used as a basis for entries in the stores ledger.

A progressive system of inventory count is followed by Chips Inc. Each week a designated portion of the materials and/or supplies is counted physically and reported to the purchasing department for comparison with the perpetual stores records. Any differences found are closed out periodically to cost of sales by a separate journal entry. In addition, notation is made on the stores ledger cards for any adjustments made.

Potatoes are handled on a slightly different basis. Because of the larger volume handled, the high inventory at certain times of the year, and the times at which certain lots of potatoes can or have to be used, special procedures were installed.

Potatoes can be stored most satisfactorily and economically in wooden pallets which hold approximately 2,200 pounds of potatoes each. As potatoes from storage must be used for approximately six months of the year, Chips Inc. utilizes some 2,500 pallets. The system of control has to provide for potato individuality yet not provide the burden and expense to the purchasing department to record individually each of the 2,500 pallets.

When the potatoes are received from the growers, they are tested for size, gravity, color and inside temperature. This information is recorded on a "Potato

Receiving Report" which serves as a master receipt for the entire shipment. After the potatoes are graded, they are dumped into the pallets and weighed. Each pallet is permanently pre-numbered for identification purposes.

The receiving report is a triplicate "snap-out" form with the original being sent to the purchasing department, the duplicate going to the vendor and the triplicate serving as a production copy and remaining in the potato specialist's possession.

The original report is filed in an "arch" file by number by the purchasing department and serves as the stores ledger card for potatoes. Inventory at the end of any month is calculated by taking the sum of the balances shown in the respective month in the "inventory" section of the potato receiving report.

As the potatoes are requisitioned for processing, the pallets of potatoes which are to be used are weighed and the weights and shrinkages information summarily recorded on the "Report on Potatoes Fried from Storage". Gravity and color tests are again taken and recorded on this form. Both sets of forms are sent daily to the purchasing department.

At the end of each month, the stores clerk totals the pounds of potatoes unused and records the total in the applicable month in the "inventory" section. Total pounds of shrinkage, rejects and spoilage are also totalled monthly for analysis and control purposes.

This system of potato control provides complete records and ready access to any lot or pallet of potatoes—yet provides no work other than the daily recording of shrinkages, dates fried and month-end totalling by the purchasing department.

STORES RECORDS FOR CONTROL

Because of the importance of materials, the cost department keeps a detailed stores record for each of the raw and stores materials items. Exhibit 2 illustrates the summary form in use for each of these materials. The technical aspects of this form and its uses are as follows.

At the end of each month, the cost department extends the pounds of production of each size by the pound factor shown on the form, to arrive at a standard material usage. The pound factor is merely the quantity of each material allowed for each pound of chips adjusted by the standard allowance for scrap. This quantity is entered in the applicable column and the cumulative year-to-date quantity computed and entered.

After the purchasing department totals and closes out the stores ledger cards, it forwards these to the cost department. The cost department enters the E.O.M. (end-of-month) inventory and the month's actual usage from these cards and computes the year-to-date actual usage. From the actual and standard usages is computed the month's usage variation and the per cent variation or "per cent off standard". This information is then recorded on the form. The variation quantities computed are used as a basis for the materials' quantity variance calculations.

This form, after being completed monthly by the cost department, is distributed to the production superintendent and the purchasing department to keep them fully informed as to individual material behavior. For instance, the production superintendent is concerned with usage variations as an indication of excessive scrap and the purchasing department in inventory levels, inventory turn-overs and forecast data.

EXHIBIT 2

EXHIBIT 2

CHIPS INC. — STORES RECORD

ITEM *10 oz./6's overwrap*

Month	E.O.M. Inventory	Mo's. Act. Usage	Y.T.D. Act Usage	Mo's. Std. Usage	Y.T.D. Std. Usage	Mo's Usage Variation	Per Cent Var.	Turn Over	REMARKS
JAN.	*34.000*	*40.000*	*40.000*	*39.500*	*39.500*	*500*	*1.3*	*15.5*	
FEB.	*35.000*	*36.700*	*76.700*	*35.900*	*75.400*	*800*	*2.2*	*12.8*	
MAR.	*42.000*	*41.000*	*117.700*	*41.400*	*116.800*	*(400)*	*(1.0)*	*12.8*	
APR.	*58.000*	*42.300*	*160.000*	*42.100*	*158.900*	*200*	*.5*	*10.2*	
MAY	*23.000*	*46.200*	*206.200*	*45.100*	*204.000*	*1.100*	*2.4*	*13.6*	Insufficient Wax on 1 Roll
JUNE	*60.000*	*47.000*	*253.200*	*46.350*	*250.350*	*650*	*1.4*	*13.6*	
JULY	*28.000*	*62.000*	*315.200*	*62.360*	*312.710*	*(360)*	*(.6)*	*16.9*	
AUG.	*46.000*	*58.000*	*373.200*	*58.120*	*370.830*	*(120)*	*(.2)*	*18.8*	
SEPT.	*24.000*	*39.000*	*412.200*	*38.490*	*409.320*	*510*	*1.3*	*13.4*	
OCT.	*56.000*	*52.000*	*464.200*	*53.150*	*462.470*	*(1150)*	*(2.2)*	*15.6*	Inventory Error
NOV.	*62.000*	*76.000*	*540.200*	*74.200*	*536.670*	*1800*	*2.4*	*15.5*	
DEC.	*32.000*	*83.000*	*623.200*	*83.200*	*619.870*	*(200)*	*(.1)*	*21.3*	
TOTAL	*n/a*	*623.200*	*623.200*	*619.870*	*619.870*	*3300*	*.6*	*20.8*	

DATA		LAST YEAR	
POUND FACTOR	*1.6640*	INVENTORY, DEC. 31	*28.000*
SCRAP FACTOR	*4%*	ACTUAL USAGE	*520.000*
STD. WT. PER *M*	*60.0 Lbs.*	STANDARD USAGE	*517.000*
MAX. INV. QUANTITY	*60.000*	VARIATION	*3000*
MIN. INV. QUANTITY	*20.000*	PER CENT VARIATION	*.6*
EST'D YEAR'S USAGE	*600.000*	TURN OVER	*17.3*

DATE	NOTES:
5/4	*Quote: Pierce Packaging — $35.50 M — 4 weeks delivery*

INVENTORY VALUATION

Since the FIFO (first in—first out) method of inventory valuation has been proven to be generally acceptable and conservative, all materials except potatoes are costed out on this basis.

All materials except potatoes are entered and priced out daily on the stores ledger cards. The daily material requisitions are priced and totalled by the stores clerk to provide the summary entry to the stores controlling ledger card. As this amount is posted daily, the total value of materials on hand of any particular class is always available.

The FIFO method of inventory valuation for potatoes is not considered satisfactory for the following reasons:

(1) Prices change constantly which would make the number of entries because of varying prices quite large and unwieldy to work with.

(2) FIFO valuation has a reputation for providing current realistic values. As potato prices may change radically from day to day, the inventory would almost consistently be over- or under-valued.

(3) The potato storages are filled when the price is usually at the lower limits of its annual cycle. Potatoes are purchased on the market when storage potatoes are still available at prices which may be as much as three to four times the price of potatoes in storage. This would have the effect of causing radical fluctuations in profits, and would make the comparison of the results of operations with prior periods difficult to comprehend and somewhat inequitable when taken for short periods (a week or less).

(4) Potatoes are not moved through storage in agreement with this pricing basis, but are moved dependent on their condition and variety. This method would have, therefore, no basis in reality as have stores materials.

(5) Potatoes are not considered as having any individuality as far as pricing is concerned. If this were not the case, profits for short periods would fluctuate to such a degree that they would be practically meaningless.

The most equitable and inexpensive basis found to value this item is the periodic average basis. In order to level out any violent price fluctuations, a month's period is used. The purchases for the month in both pounds and dollars are added to the opening inventory and an average price is struck which is used to value the number of pounds remaining in inventory as shown by the potato receiving reports. This, of course, can only be done at the end of the month, as follows:

Actual Potato Cost Data	Pounds	Price Cwt.	Dollars
Opening Inventory	450,000	2.000	9,000.00
Purchases	800,000	2.078	16,625.00
Sub Total	1,250,000	2.050	25,625.00
Less: Closing Inventory (Periodic Average Cost)	350,000	2.050	7,175.00
Sub Total	900,000	2.050	18,450.00
Less: Shrinkage, Rejects and Spoilage	83,673	n/a	n/a
Consumption	816,327	2.261	18,450.00

This information is used in a succeeding section for variance analysis.

STANDARDS FOR RAW MATERIALS

The standards for raw materials are set at the beginning of the year and are not revised during the period.

POTATOES—The specific gravity of the potato is the major determining factor affecting the yield of chips. A moving five-year average is used for setting the standard specific gravity. In this case, the average gravity is assumed to be 1.075 which would give a chip yield of 25.0 lbs. per cwt. of potatoes.

Standard price and provision for shrinkage, rejects and spoilage is also based on a five-year moving average and, in this case, assumed to be $2.00 cwt. and 10% respectively.

From these data, the standard cost for potatoes would be $2.00 x $\frac{1}{.25}$ x 110% = $8.800 per cwt. chips.

For materials variance analysis, the potato storage overhead is considered as part of the potato costs and standards for this cost are included in the standard cost for potatoes. Assuming the estimated year's production to be 2,500,000 pounds of chips, the pounds of potatoes required to meet this estimate would be $\frac{2{,}500{,}000}{.25}$ x 110% = 11,000,000 pounds.

From a flexible budget for storage overhead prepared at the beginning of the year are determined rates for the variable and fixed elements of this cost on a per cwt. of chips basis. The following is a determination of the rates for overhead, assuming the budgeted amounts set out below for 11,000,000 pounds of potatoes through-put.

	Budgeted Amount	Pounds Through-Put	Rate Per Cwt. Potatoes
Fixed overhead	$ 8,800.00	11,000,000	.08
Variable overhead	7,700.00	11,000,000	.07
Total	$16,500.00	11,000,000	.15

From this rate, the standard cost for overhead per cwt. chips becomes $\frac{1}{.25}$ x 110% x .15 = .660.

Total cost per cwt. of chips for potatoes is the sum of these two items, i.e., $8.800 + $0.660 or $9.460.

SHORTENING—The standard "disappearance" of shortening is found to be 42.3% of the weight of the chips. Expressed in another way, this means that 42.3 pounds of shortening are used in the frying of each 100 pounds of chips. The standard price is set at the level which it is expected will be experienced during the period. In this case, it is assumed the actual price will be $21.00 cwt. The standard cost per cwt. chips for shortening thus becomes $0.21 x 100 x 42.3% = $8.883.

SALT AND BAR-B-QUE SEASONING — An average salt and Bar-B-Que seasoning content based on prior years is developed and used as a standard. The salt content is adjusted depending on the variety of potato being processed, but not to a degree which would make a standards adjustment necessary. As in the case of shortening, estimated actual prices are used as standards.

Two types of salt are used—plain at a standard price of $2.00 cwt. and an anti-oxidant salt at a price of $8.00 cwt. Standard quantities for each are 1.25 pounds per cwt. chips. Bar-B-Que seasoning standard quantity and price are 3.00 pounds and $50.00 cwt. per cwt. chips respectively.

Standard costs thus become:

Regular chips	Plain	1.25 lbs. x .02	$0.025
	Anti-Oxidant	1.25 lbs. x .08	$0.100
			$0.125
Bar-B-Que chips	Salt as above		$0.125
	Seasoning	3.00 lbs. x .05	$1.500
			$1.625

FUEL OIL—Average actual usage over prior periods is again used as a standard. Expected actual price is used as a standard for price. Assuming 4.3 gallons per cwt. chips as a standard for quantity and $0.155 as the standard price, the cost per cwt. chips is 4.3 x $0.155 = $0.667.

In summary, the standard raw material cost per cwt. of chips is:

		Cost Per 100 Lbs.
Potatoes—Material	$8.800	
Overhead	$0.660	$ 9.460
Shortening		$ 8.883
Salt		$ .125
Fuel Oil		$ .667
Total—Regular Chips		$19.135
Seasoning for Bar-B-Que Chips		$ 1.500
Total—Bar-B-Que Chips		$20.635

MATERIALS VARIANCE ANALYSIS

The complete analysis of material cost variations is considered to be one of the most important duties which the cost department performs.

For purposes of illustration, the raw materials cost for the month will be broken down and analyzed.

The following facts and figures are to be assumed:

(a) Month's production is 200,000 pounds of chips, of which 14,000 pounds are of the Bar-B-Que variety

(b) Potato cost (as above)		$18,450.00	
Potato Storage Overhead Expenses		$ 1,250.00	$19,700.00
Shortening Cost — 86,000 lbs.			$17,200.00
Salt and Seasoning—Plain	2,400 lbs. @ $ 2.00 cwt.		
Anti-Oxidant	2,450 lbs. @ $ 8.10 cwt.		
Bar-B-Que	400 lbs. @ $51.00 cwt.		$ 450.45
Fuel Oil—8,500 gallons			$ 1,360.00
Total Raw Materials Cost			$38,710.45

Detailed descriptions of computations made will be given for potatoes only, as the method used for the other raw materials follows a similar pattern.

POTATOES — Refer to previous data for details of actual usage and cost.

CONSUMPTION PRICE VARIANCE			
Net usage @ actual price	816,327 x $2.05 cwt.	$16,734.70	
Net usage @ standard price	816,327 x $2.00 cwt.	$16,326.54	$ 408.16
POTATO USAGE VARIANCE			
Net usage @ standard price	816,327 x $2.00 cwt.	$16,326.54	
Standard usage @ standard price	800,000 x $2.00 cwt.	$16,000.00	$ 326.54
SHRINKAGE, REJECTS, SPOILAGE PRICE VARIANCE			
Actual S.R.S. @ actual price	83,673 x $2.05 cwt.	$ 1,715.30	
Actual S.R.S. @ standard price	83,673 x $2.00 cwt.	$ 1,673.46	$ 41.48
SHRINKAGE, REJECTS, SPOILAGE QUANTITY VARIANCE			
Actual S.R.S. @ standard price	83,673 x $2.00 cwt.	$ 1,673.46	
Standard S.R.S. @ standard price	80,000 x $2.00 cwt.	$ 1,600.00	$ 73.46
POTATO STORAGE CONTROLLABLE VARIANCE			
Actual storage cost		$ 1,250.00	
Budget on standard through-put $\frac{\$8.800}{12}$ + 880,000 x .07		$ 1,349.33	(99.33)
POTATO STORAGE NON-CONTROLLABLE VARIANCE			
Budget on standard through-put $\frac{\$8.800}{12}$ + 880,000 x .07		$ 1,349.33	
Standard through-put @ standard rate	880,000 x .15	$ 1,320.00	$ 29.33
TOTAL VARIATION			$ 780.00

SHORTENING—

SHORTENING PRICE VARIANCE = $17,200.00 (86,000 x $21.00 cwt.)	$ (860.00)
SHORTENING USAGE VARIANCE = $21.00 (86,000 − .423 x 200,000)	$ 294.00
TOTAL VARIATION — FAVORABLE	$ (566.00)

SALT AND SEASONING —

PRICE VARIANCE = $450.45 — (2,400 x $ 2.00 cwt.)	
— (2,450 x $ 8.00 cwt.)	
— (400 x $50.00 cwt.)	$ 6.45
USAGE VARIANCE = $ 2.00 cwt. (2,400−1.25 x 2,000)	
+ $ 8.00 cwt. (2,450−1.25 x 2,000)	
+ $50.00 cwt. (400−3.00 x 140)	$ (16.00)
TOTAL VARIATION — FAVORABLE	$ (9.55)

FUEL OIL—

FUEL OIL PRICE VARIANCE = $1,360.00 − (8,500 x $0.155)	$ 42.50
FUEL OIL USAGE VARIANCE = $0.155 (8,500 − 4.3 x 2,000)	$ (15.50)
TOTAL VARIATION — UNFAVORABLE	$ 27.00

The total of the raw material variation is:

Potatoes	$ 780.00
Shortening	$(566.00)
Salt and Seasoning	$ (9.55)
Fuel Oil	$ 27.00
Total	$ 231.45

As a check on the accuracy of the detailed variance analysis, total actual costs as reported by the general ledger are compared with the total standard cost to see that they are in agreement.

Stores materials are subjected to the same rigorous analysis treatment as are raw materials but by type of material only, although information is readily available on an individual item basis.

An accumulation of the month's usage variations from the stores record cards at the standard prices for materials provides the materials quantity variance. The total dollar actual usages by materials from the stores ledger cards are compared with an accumulation of the month's actual usages from the stores record cards at standard prices. This difference is the materials price variance.

As a control check on the accuracy of the variation analysis, the pounds of production by pack sizes are extended by a summary of the standard costs per 100 chip pounds as shown by the product cost sheet and compared with the actual costs as shown by the general ledger. The difference between these two figures agreeing with the total of the variations provides a satisfactory check.

Any abnormal variances are further investigated and reasons ascertained as to the cause or causes of the variances. These extraordinary variances are the subject of a special monthly report which brings these items forcefully to the attention of management. Each month, one section of the materials is investigated on a detailed basis and the results of this study are also included in this special report.

It should be noted that the system of materials control described is designed to provide ready access to details of performance of each individual material item as well as material groups. This allows for specific determination of the causes of the variances developed.

(To be Concluded in the March Issue)

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TOPICAL comments

LOOKING AHEAD

Aluminum will be more widely used for construction in the future, the Aluminum Association in the U.S. predicts. The Association estimates 170 lbs. of aluminum went into the average home last year and this figure is expected to triple by 1965. The big item in homes is aluminum siding which has become popular for repairs and modernization as well as for new structures. *(Bus. Week, Jan. 7/61.)*

Unionization of the office worker may be labor's next big goal. How broad is the field? According to a recent N.O.M.A. survey of 2,002 companies in the U.S. and Canada, 94% of the respondents reported their offices were not unionized. With 83% reporting that their employees were not interested in joining a union, the unions would seem to have their work cut out for them. *(Off. Exec., Jan. 1961.)*

Solution to the parking problem may be provided by a vertical parking tower, developed by Belgian engineers, that works along the principles of a giant ferris wheel. Completely automatic, the lift is activated when the customer puts a key in the control panel, thus delivering an empty parking platform to the loading level. At about $60,000 per installed unit, the device is considered to have good possibilities for Canadian use. *(FP, Dec. 17/60.)*

Executive demand indicator for 1961 is set by a survey made by Executive Manpower Corp., New York. Demand is highest in sales (28% of available jobs); manufacturing, 22%; general management/administration, 16%; and engineering, 15%. *(Dun's Rev., Dec. 1960.)*

OF GENERAL INTEREST

The frozen foods industry in Canada now accounts for about 4½% of Canadian food sales and production has risen above 300 million pounds a year. One-quarter of the Canadian fish catch, about a third of the pea and strawberry crops, and 60% of the raspberry crops are destined each year for commercial freezers. *(Bank of N.S. Monthly Rev., Nov. /60.)*

World's leading airlines in 1959 by number of passenger miles were: American, TWA, United, Eastern, PAA, Air France and TCA. These seven topped the list of the 90-member International Air Transport Association which includes virtually all airlines this side of the Iron Curtain. Between them, the five leading American airlines carried some 42% of the world's air traffic. Much further behind were the next contenders—Air France with almost 4% and TCA with about 3%. *(The Economist, Nov. 19/60.)*

Canadian unemployment picture has its brighter spots. There are 250,000 *more* Canadians *with* jobs today than there were three years ago. More than 70% of the unemployed have been without jobs for less than three months and 60% of the jobless come from families where one or more other persons are working. *(Industry, Jan. 1961.)*

Latest use for nylon is in dam-building. A tubular dam of neoprene-coated nylon has been installed in the Los Angeles river and is working well. Big advantage of this type of dam is that it collapses at a predetermined water pressure, thus preventing flooding. *(Can. Bus., Jan. 1961.)*

Fringe benefits are often claimed to handicap North American industry in foreign markets by adding as much as 20-30% to the wage bill. But recent bank studies show "social charges" are steeper in many European countries. In Italy, fringe benefits add nearly 75% to wage costs; in France, the figure is 50%; in Germany, 44%. These benefits include accident and sickness insurance, family allowances, housing subsidies, health and recreation schemes, training grants, free or subsidized meals and free coal. *(Man. Rev., Jan. 1961.)*

ON THE PERSONAL SIDE

Heart attacks, in 10% to 15% of cases among urban, middle-aged men, show no symptoms, the American Medical Association warns. Always insist on an electrocardiogram in a medical checkup. *(Bus. Week, Dec. 10/60.)*

Actually, it is not the senior executive who need fear coronary thrombosis the most. It is the struggling junior executive or the oft-frustrated white collar worker who is most subject to such an attack, a London medical conference reveals. The physical type of the man prone to heart ills is described as "short, stocky, muscular, large-boned, tending to be bald, often an athlete. His personality is vigorous, ambitious and aggressive." *(Cont., Jan. 1961.)*

How is the food dollar of the city-dwelling Canadian family spent? On the average, as a recent Government study shows in detail, like this:

meat and fish	28%	fruit and vegetables	15%
dairy products	12%	bakery and cereal products	12%
fats and oils	5%	eggs	3%
frozen foods	1%	other groceries	12%
food purchased and eaten away from home	12%		

(DBS, Jan. 13/61.)

Progressive education today may be a subject of dispute but history shows many strange courses have crept into the school curriculums of various races at various times. The Athenians gave classes in javelin throwing, jousting and chariot racing. Elephant-riding was *de rigueur* in India, as were classes in flower arrangement, incense smelling and the art of pouring tea, in Japan. Topping them all, perhaps, was the training in how to steal without getting caught, given by the ancient city state of Sparta. *(Precis)*

College education in Canada is losing prestige, educators report. Reason is that skilled labor now pays off as well, if not better, than many jobs requiring degrees. *(FP, Dec. 10/60.)*

S.I.C.A. News

THE SOCIETY OF INDUSTRIAL & COST ACCOUNTANTS OF CANADA

INCORPORATED 1920

A DECADE OF GROWTH

Statistics make rather dull reading. When one scans the score on births, deaths, accidents, imports, exports, or a host of other factors that are vital to the life of a nation, it is difficult to visualize the human implications behind these figures—the people and patterns of living that make them up.

Despite this lack of color in figures, we thought the members of S.I.C.A. might be interested in seeing some comparative totals as they stood at the end of 1960 and at the end of 1950. Although the figures tell nothing of the individual's growth and accomplishments, they do tell of the effort that S.I.C.A. members as a group have put forth. Persistence in their studies and pride of accomplishment in their profession are both reflected in the growth and vitality shown by these figures.

Membership Growth

	Registered	General	Student	Total
1960	1318	1329	4908	7555
1950	564	688	1416	2668
Increase	754	641	3492	4887
Percentage Increase	134%	93%	246%	183%

Gross Revenue has risen from less than $80,000 in 1950 to over $482,500 in 1960.

Figures are not complete for 1961 registrations, but preliminary counts show that this year's increase is at least as great and possibly greater (both as a percentage and in actual numbers over last year) as the average yearly increase has been over the last decade.

Obviously, this growth in members and revenue has been of great benefit to the Society. Increased revenues have enabled S.I.C.A. to make significant improvements in existing course content and to add new courses to the curriculum. They have made possible the introduction and expansion of the Executive Development Program. They have permitted additions to the administrative staff which, in turn, have led to the introduction of many new services and the re-organization of existing procedures along more efficient lines. Among the new services might be mentioned the Special Study series and the expansion in library and other facilities. Internal re-organization has resulted in more effective instruments of co-ordination, such as the Central Examination Board and other national committees, and the consequent improvement in methods and procedures.

These changes have not only attracted more members, but have given S.I.C.A. and its members greater professional prestige in the business community.

It should be a source of pride to all our members to note that the R.I.A. designation has come to be recognized as a mark of no mean distinction. Business executives are fast becoming more aware of the benefits of R.I.A. training. Each year, more firms are asking for industrial accountants with this background and more firms are financing R.I.A. training for their employees.

At the same time, the growth in prestige has triggered off new growth in membership. More students today mean more Registered members tomorrow. It is almost a certainty that, in another decade, S.I.C.A. will have a large body of senior business citizens who have had the benefit of R.I.A. training. These senior members will play a vitally important role in the Society. Not only will they encourage and demand training of industrial accountants but, as members of S.I.C.A., they can offer valuable advice on changes necessary in the courses and services offered by S.I.C.A. in order for it to play a valuable role in the business community.

For these impressive growth figures would have little significance unless the content of S.I.C.A. educational courses and its services kept pace with changing industrial needs. It is the responsibility of S.I.C.A. officers and members to increase the value of graduates by emphasizing quality. It is the responsibility of the graduate to apply his knowledge to industrial problems, thus proving to members of management that he has earned an importnat position in the industrial organization.

CONFERENCES AND SEMINARS

Plans for the 40th Cost and Management Conference in Vancouver next June are moving ahead. Program details will be disclosed in an announcement to the membership which will be released this month. A list of speakers with whom negotiations are being carried out reads like a "Who's Who" of Conference talent in the West Coast, with a sprinkling of equally capable men from centres farther east. As to the lighter side of the Conference program, the entertainment possibilities of Vancouver and area are legion and the only problem of which Conference Chairman Ernie Owen complains is that of selecting the best from so many choices.

Easterners will be interested to learn that the Conference Committee is looking into the possibilities of organizing a special "Conference train" from Toronto to Vancouver with stops at points of interest on the outward and return journeys. What an opportunity to combine family vacation with attendance at the Conference! Some of the older members still recall the memorable tour made on the S.I.C.A. special to the Banff Conference some years back. Easterners! Watch for details of this! Westerners! Prepare for the mightiest invasion from the East since the Grey Cup game!

The Executive Development Program moves into high gear next month with the first seminar offering of the new year scheduled at the Guild Inn, Scarborough, Ontario. The subject is Cost Reduction and Cost Control and the moderators will be George E. Terris, Vice-President, Payne-Ross Limited; and D. R. "Bob" Gilmaster, Controller, Omark Industries. This seminar has been acclaimed by groups at the Seigniory Club; Dalhousie University, Halifax; and Vancouver for its down-to-earth, practical approach. With the present trend in business toward tighter profits, a full house is expected to be on hand at the Guild Inn.

On March 1 - 3 next, the Society's first seminar in the Province of Alberta will be presented. Previously, Alberta members were content to attend seminars offered in neighbouring provinces. They are now pleased to be able to lay out the welcome mat

for members and interested parties in B.C., Saskatchewan and Manitoba. The Banff School of Fine Arts is the location and the moderating team will be Dr. Earl D. Bennett, University of Texas, and Gerald G. Fisch, Managing Director, Payne-Ross Limited. The subject: Managerial Controls.

Also in March (15 - 17), a seminar on Reporting Financial Data to Management will be held at the Chateau Lac Beauport, Quebec City. More about this one later.

PUBLICATIONS AND TECHNICAL SERVICES

Since the cumulative **Topical Index** of the S.I.C.A. library was distributed last August, we have had many requests for copies from students and others.

A copy of the index was sent without charge to all Registered and General members. Extra copies of this index are available to senior members and to all others at $2.00 per copy. When they graduate, students automatically receive a complimentary copy of this publication as well as a copy of the last Special Study published. New General members also receive copies of these publications.

The new **Topical Index** is a selective guide to the most valuable references in the library. Not all the references given in the previous index are listed and much of the older material has been deleted. However, if you do not find what you want or do not have an index, the librarian will be glad to select and forward material on any subject.

Another publication in which students will be interested is the Examination Book for 1960. This gives complete questions and solutions to the 1960 examinations with the exception of Report Writing. This is now available from the National Office at $1.00 per copy. Examination Books for most previous years are also available.

Many members may not be familiar with the Society's new photocopy service of publications catalogued in the library. Under this service, photocopies of library articles will be made at the cost of 15¢ per page to members and 20¢ per page to non-members. You are cordially invited to make use of this service.

CHAPTERS AND MEMBERSHIP

Inter-Chapter Competition

The chapter standings recorded below reflect an interesting picture as far as the first place contenders are concerned. Oshawa, our newest chapter, is still holding its comfortable lead and appears determined to clinch the National President's Trophy this year as they promised to do after winding up in third place last year.

It is refreshing also to see two chapters in second and third places which have never been in a strong contending position before—Winnipeg and Grand River Chapters. In the latter case, this reflects a considerable coordinated effort on the part of its Directors, who are spread out over a wide area. Grand River Chapter is made up of several medium-sized cities in Ontario's Grand River Valley, such as Galt, Guelph, Kitchener, Preston, Stratford, and Waterloo, and other smaller towns.

For the information of newer members, the five factors for which points are awarded on the competition are as follows:

1. New members
2. Chapter report forms received monthly by the National Office
3. Manuscripts submitted for publication in **Cost and Management**
4. Chapter programs printed at the beginning of each season
5. Membership maintenance computed after student and other deletions are recorded each season.

Up to 1200 points are allowed each chapter for articles suitable for publication. Members are invited to submit articles through their local chapters for consideration by the editor of **Cost and Management.**

Unlimited points may be secured for new members. As points for new student members are almost completely tallied, new General members form the remaining source of major points in the competition. This is one area in which every member may contribute toward the upbuilding of the Society and his local chapter—by inviting others in the administrative accounting fraternity to share in the benefits of S.I.C.A. membership.

INTER-CHAPTER COMPETITION

Chapter Standings at December 31, 1960

Chapter	New Members	Report Forms	Printed Program	MSS.	Total
Oshawa	1360	32	300	800	2492
Winnipeg	1616	32	300	120	2068
Grand River	1600	32	300		1932
Edmonton	1410	24	300	150	1884
Vancouver	1186	32	300	300	1818
Eastern Townships	1018	32	300	400	1750
Moncton	1200	8	300	200	1708
Lakehead	867	32	300	400	1599
Toronto	1274	8	300		1582
Ottawa	1090	32	300	150	1572
Saint John	1040	32	300	200	1572
Victoria	1240	32	300		1572
Hamilton	1221	32	300		1553
London	1009	24	300	150	1483
Kingston	840	16	300	200	1356
Niagara	960	24	300		1284
Quebec	296	16	300	600	1212
Regina — Moose Jaw	1200				1200
Windsor	857	40	300		1197
Halifax	820	16	300		1136
Montreal	769	8	300		1077
Peterborough	760	16	300		1076
Cape Breton	680	8	300		988
Saskatoon	960				960
Bay of Quinte	560	24	300		884
Kent County	400	8	300		708
St. John's	680				680
Calgary	204	24	300	150	678
Fredericton	320	24	300		644
Cornwall	280	16	300		596
St. Maurice Valley	204		300		504

Chapter News

As mentioned in the last issue, some features formerly included in **S.I.C.A. Newsletter** will not appear in this publication. Some of the more significant chapter activities will, however, be mentioned while much of the chapter news and ideas for chapter programming will be confined to the **Chapter Directors' Newsletter** which, as the name implies, is sent only to members of each chapter board.

The former feature "Chapter Calendar" is not being continued, while the names of new Registered and General members by each province will appear periodically rather than each month.

Dean McPhee's Retirement Marked

The Society of Industrial and Cost Accountants of British Columbia will pay a fitting tribute to Dean E. D. McPhee when he retires from the Faculty of Commerce and Administration of the University of British Columbia this year.

In recognition of his services to the Society, the B.C. Provincial Council is arranging a "farewell" dinner meeting in his honor. At the same time his successor, Dean Neil Perry, will be officially welcomed by the Council.

Windsor Chapter First to Experiment in Business Games

Windsor Chapter reports the outstanding success of the recent meeting it sponsored on business games. Guests from the Detroit Chapter of N.A.A. brought the number of those taking part in this newest form of audience participation program to 186.

R. C. Trundle, President of Trundle Consultants Inc. (New York - Cleveland - Chicago), presented a unique "Decision Game on Profit Planning", in which the audience was provided with a monthly basic profit and loss information sheet plus a series of six monthly decisions that had to be made. Problems relating to this decision-making, in which everyone in the audience participated, were worked out on prepared calculation sheets. Answers were then compared and commendable solutions elaborated upon.

This is the first time such a project has been undertaken in a chapter and its success is a credit to the Windsor Chapter.

PERSONALS

P. J. CALLERY, B.Com., R.I.A., formerly of Northern Electric Co. Ltd. in Belleville, has been appointed Manager, Cost Accounting of Mead Johnson of Canada Ltd., Belleville.

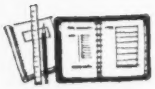
W. E. WILLIAMS, R.I.A., has been appointed Assistant Comptroller of Gillies-Guy Ltd., Hamilton. Mr. Williams was formerly with Ready-Mix Concrete (Hamilton) Ltd.

J. C. BEVERIDGE, R.I.A., C.A., has joined Pet Milk Company, Toronto, as Comptroller. Mr. Beveridge was formerly with Vickers-Sperry of Canada Ltd.

K. G. NICHOLS, R.I.A., Chairman of the Vancouver Chapter, has been appointed Director and Assistant Secretary-Treasurer of Commonwealth Construction Company Limited. Mr. Nichols also holds the position of Director and Secretary-Treasurer of Mathias & Nicol Installations Ltd.

W. I. KITCHENER, R.I.A., formerly of Weiser Lock Co. of Canada, has joined Imperial Investment Corporation Limited as Head Office Accountant. Mr. Kitchener is President of the British Columbia Society.

G. L. RIMMER has been appointed Accountant of Centralab Canada Limited, Ajax, Ontario. Mr. Rimmer is a General Member of the Oshawa District Chapter.



STUDENTS AND COURSES

The timetable for the 1961 examinations has been set as follows:

Accounting I — Fundamentals	Friday	April 28 — 4 hours
Industrial Legislation	Wednesday	April 26 — 4 hours
Accounting II — Intermediate	Monday	April 24 — 4 hours
Industrial Organization and Management	Monday	May 1 — 4 hours
Fundamentals of Cost Accounting	Thursday	April 27 — 4 hours
Accounting III — Advanced	Tuesday	May 2 — 3 hours
Managerial Statistics	Tuesday	April 25 — 3 hours
Advanced Cost Accounting — Paper I	Wednesday	April 26 — 3 hours
Advanced Cost Accounting — Paper II	Friday	April 28 — 3 hours
Report Writing	Wednesday	May 3 — 3 hours
*Accounting IV — Management	Thursday	May 4 —

*There will be no national Accounting IV — Management examination set by the Central Examination Board in 1961.

For time and place of the examinations, please consult your Provincial Society.

EXAMINATIONS 1960
ACCOUNTING III

QUESTION 4 (28 marks)

Preliminary Trial Balance—December 31, 1959

Clark and Dean

	Dr.	Cr.
Bank	$ 2,112.46	
Petty cash fund	30.00	
Accounts receivable	8,106.39	
Accumulated allowance for bad debts		$ 545.54
Dom. of Canada bonds, 3%, at cost (market value $1,450)	1,600.00	
Merchandise inventory January 1, 1959	2,359.58	
Land at cost	1,000.00	
Buildings at cost	7,000.00	
Accumulated allowance for depreciation, buildings		1,750.00
Accounts payable		4,573.49
Mortgage payable—5%		4.200.00
C. Clark—Capital		3,000.00
D. Dean—Capital		5,000.00
C. Clark—Current account	1,342.97	
D. Dean—Current account	1,666.80	
Sales		31,696.52
Fixed assets disposal (profit)		795.00
Interest revenue		33.00
Merchandise purchases	19,877.23	
General office expenses	1,740.40	
Salesmen's salaries	2,843.34	
Advertising	1,106.46	
Office supplies	632.92	
Mortgage interest expense	175.00	
	$ 51,593.55	$ 51,593.55

Additional information:

Inventories valued at lower of cost or market at December 31, 1959: Merchandise $1,735.11; Office Supplies $84.00.

Mortgage interest is payable October 31 and April 30 each year. The mortgage is dated October 31, 1955, and is due October 31, 1965.

Interest coupons on the Dominion of Canada bonds are dated September 30 and March 31 each year.

Depreciation on buildings is provided at the rate of 2½% per annum on a straight line basis.

The accounts receivable have been analysed and bad debts in the amount of $241.79 are definitely uncollectible. It is estimated that, after writing these bad debts off in full, a provision equal to 5% of the remaining outstanding accounts will be adequate to provide against possible losses on collection of the accounts.

The balance of C. Clark's current account January 1, 1959, was $1,657.03 (Cr) and during 1959 Clark's withdrawals had been charged against this account.

The balance in D. Dean's current account January 1, 1959, was $833.20 (Cr) and during 1959 Dean's withdrawals had been charged against this account.

The partnership agreement provides for salary allowances of $2,900.00 and $2,600.00 per annum for Clark and Dean respectively and interest on capital balances (which are fixed at $3,000 and $5,000 respectively) of 5% per annum. The residue of profits (or loss) is to be divided in the ratio—Clark 4/9, Dean 5/9.

REQUIRED:

From the preliminary trial balance and other information taken from the books of Clark and Dean prepare:

(a) an operating statement for the year ended December 31, 1959
(b) a statement of partners' current accounts for the year ended December 31, 1959
(c) a balance sheet at at December 31, 1959.

SOLUTION 4

Clark and Dean
Balance Sheet as at December 31, 1959

Assets

Current Assets			
Cash		$ 2,142.46	
Dominion of Canada Bonds (market value $1,450)		1,600.00	
Accounts Receivable	$ 7,864.60		
Less—Allowance for Doubtful Accounts	393.23	7,471.37	
Interest Receivable		12.00	
Merchandise Inventory		1,735.11	
Prepaid Expense		84.00	$ 13,044.94
Fixed Asssets — at cost			
Land		1,000.00	
Building	7,000.00		
Accumulated Depreciation	1,925.00	5,075.00	6,075.00
			$ 19,119.94

Liabilities and Capital

Current Liabilities			
Accounts Payable and Accruals			$ 4,608.49

Long Term		
Mortgage Payable 5% due October 31, 1965		4,200.00
Capital		
C. Clark — Capital January 1, 1959	$ 3,000.00	
Add — Current Account December 31, 1959	1,449.79	4,449.79
D. Dean — Capital January 1, 1959	5,000.00	
Add — Current Account December 31, 1959	861.66	5,861.66
		$ 19,119.94

Clark and Dean

Statement of Partners' Current Accounts

For the year ended December 31, 1959

	C. Clark	D. Dean	Total
Balance January 1, 1959	$1,657.03	$ 833.20	$2,490.23
Add — Salaries to Partners	2,900.00	2,600.00	5,500.00
— Interest on Capital	150.00	250.00	400.00
	4,707.03	3,683.20	8,390.23
Deduct — Drawings	3,000.00	2,500.00	5,500.00
— Share of Net Loss	257.24	321.54	578.78
	3,257.24	2,821.54	6,078.78
Balance December 31, 1959	$1,449.79	$ 861.66	$2,311.45

Clark and Dean

Statement of Profit and Loss

For the year ended December 31, 1959

Sales		$31,696.52
Cost of Sales	$ 2,359.58	
Merchandise Purchases	19,877.23	
	22,236.81	
Inventory December 31, 1959	1,735.11	20,501.70
Gross Profit		11,194.82
Selling, General and Administrative Expense		
Advertising	1,106.46	
Salesmen's Salaries	2,843.34	
General Office Expense	1,740.40	
Office Supplies	548.92	
Bad Debt Expense	89.48	
Depreciation	175.00	6,503.60
Net Operating Profit		4,691.22
Other Income		
Profit on disposal of fixed assets	795.00	
Interest Revenue	45.00	840.00
		5,531.22
Other Expense		
Mortgage Interest	210.00	
Interest on Partners' Capital	400.00	
Partners' Salaries	5,500.00	6,110.00
Net Loss		$ (578.78)